

## ABSTRACT OF THE DISCLOSURE

An annealing furnace, includes a processing chamber configured to store a substrate; a susceptor located in the processing chamber so as to load the substrate and  
5 having an auxiliary heater for heating the substrate at 650 °C or less, the susceptor having a surface being made of quartz; a gas supply system configured to supply a gas required for a thermal processing on the substrate in parallel to a surface of the substrate; a transparent  
10 window located on an upper part of the processing chamber facing the susceptor; and a main heater configured to irradiate a pulsed light on the surface of the substrate to heat the substrate from the transparent window, the pulsed light having a pulse duration of approximately 0.1  
15 ms to 200 ms and having a plurality of emission wavelengths.